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Rediscovery of the leech genus *Ancyrobdella* (Hirudinea, Glossiphoniidae)

by
H. Nesemann

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Abstract: New records of leeches of the genus *Ancyrobdella* from Honshu and Shikoku in Japan are listed. *A. smaragdina* n. comb. was mistakenly regarded for a Japanese form of the *Glossiphonia paludosa*. It is described here and separated from the genus *Glossiphonia* by the morphology of the proboscis.
Key words: Glossiphoniidae, taxonomy, *Ancyrobdella smaragdina* n. comb.

Introduction

In 1915 the Indian zoologist Dr. N. Annandale investigated the bottom fauna of the Biwa Lake in Japan. He collected four specimens of the remarkable *Ancyrobdella biwae* Oka, 1917 from a depth of 80 meter. Since the description of his material by Oka (1917a, b), this genus was never found again and there is neither further material nor additional information in the literature.

The leech genus *Ancyrobdella* was regarded as monotypic by Soós (1969). It was included in the catalogue of the genera and species. Sawyer (1986, Vol. 2: 646-697) did not mention the leech *Ancyrobdella biwae* in his "Taxonomic synopsis and list of species" of all leeches of the world. This fact may be caused by the unclear systematic position of *Ancyrobdella*. According to Oka "...this leech is more closely allied to the Glossiphoniids, than to any other.."(1917b: 174). Thus, the information given by Sawyer (1986) is very confusing, based on the lack of any new information about this genus. It was listed as an "obscure Japanese species" (1986, Vol. 2: 446), as "endemic genus and species" (1986, Vol. 2: 737) and finally, this author placed *Ancyrobdella biwae* into the group of "gen. et sp. inquir." (1986, Vol. 2: 739).

In 1994, Kurt. M. Polanec and the author collected new material of *Ancyrobdella* from several water bodies in Japan. It was possible to find a further (second) common species of this genus, that is incorrectly regarded as the Japanese form of the European *Glossiphonia paludosa* (Carena, 1824).

The present paper is dealing with the systematic position of the so-called "Palaearctic species" in the Asian fauna and the confusion about the use of the taxon name *paludosa* (Carena, 1824). Until now, there exist several species of at least three different genera (*Ancyrobdella* Oka, 1917; *Batracobdelloides* Oosthuizen, 1984; *Glossiphonia* Johnson, 1816), which were mistakenly regarded as the same species. All of them have two pairs of eyes, seven pairs of crop caeca, greenish colour and neither prominent papillae nor dark pattern. The first results about the European species have already been published by Nesemann & Csányi (1995).

Material and methods

The leeches were collected by hand and fixed with 10% ethanol for some hours. The material was finally preserved with 70% ethanol. It is deposited in the collection of H. Nesemann and in the Department of Zoology of the Hungarian Natural History Museum (HNHM) in Budapest.

Results

Ancyrobdella Oka, 1917

1917a *Ancyrobdella* Oka - Annot. Zool. Jap. 9 (3): 185-193.

Diagnosis: Glossiphoniidae with cylindrical or dorsoventrally flattened body. The mid-body somites are basically triannulate. The head bears 0-4 eyes. The mouth porus is situated centrally in the oral sucker. The proboscis may reach nearly the half length of the body and is armed with three hook-like prominences very near its anterior tip. The prominences are separated by 120° arc, one is of dorsomedian and two are of ventrolateral arrangement. The crop has six (*A. biwae*) or seven pairs (*A. smaragdina*) of caeca. The (? endemic) genus is represented with two species in Japan, known from Honshu and Shikoku.

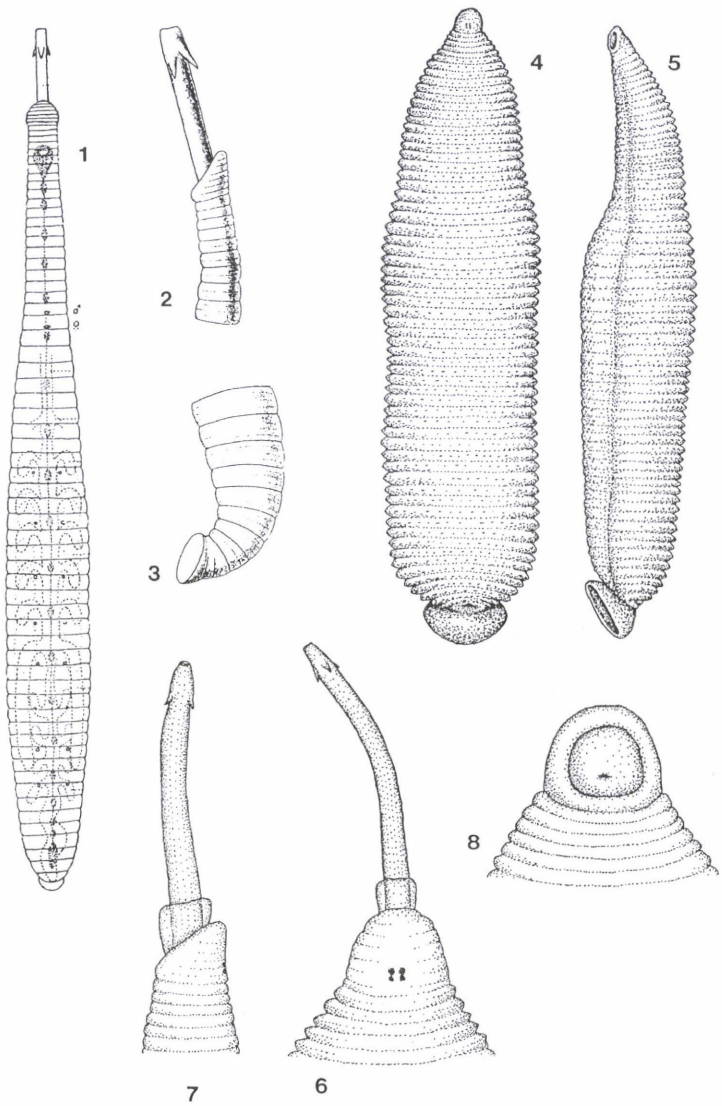
Ancyrobdella biwae Oka, 1917
(Figs 1-3)

1917a *Ancyrobdella biwae* Oka, Annot. Zool. Jap. 9 (3): 185-193.
1917b *Ancyrobdella biwae* Oka, Mem. Asiat. Soc. Bengal 6: 169-174, Figs. 9-12.

Although there are no further records in the literature, the excellent descriptions given by Oka (1917a, b) allow us to compare *Ancyrobdella biwae* with the recently collected material of *Ancyrobdella*. By subsequent designation, this is the type-species of the genus. It differs from *A. smaragdina* by the absence of eyes, by length of the proboscis, by the presence of only six pairs of crop caeca and by its extraordinary elongated Piscicolid-like body (Fig. 1). This may be a highly specialised species, which seems to be adapted to the life in the deeper profundal zone of Lake Biwa.

Ancyrobdella smaragdina (Oka, 1910), new combination
(Figs 4-8)

1910 *Glossiphonia smaragdina* Oka, Annot. Zool. Jap. 7: 168:
1917 *Glossiphonia smaragdina* Oka, Mem. Asiat. Soc. Bengal 6: 166-167.
1928 *Glossiphonia smaragdina* Oka, Proc. Imperial Acad. 4 (9): 543-545.
1928 *Hemiclepsis smaragdina* Oka, Proc. Imperial Acad. 4 (9): 544, Fig. 1.
1935 *Hemiclepsis smaragdina* Oka, Proc. Imperial Acad. 11 (6): 240.
1962 *Batracobdella smaragdina* Pawlowski, Zeszt. Nauk. Uniw. Lodz. Nauk. Mat.-Przyrod., Ser. II, zeszt. 12: 132, 136.
1986 *Glossiphonia paludosa* (partim) Sawyer, Leech Biology and Behaviour, Vol. II: 737, 741.



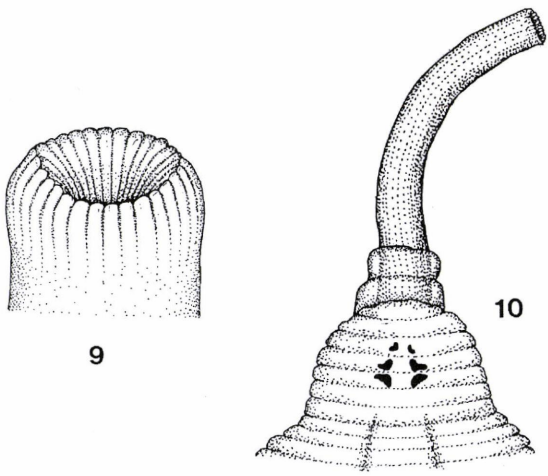
Figs 1-3. *Ancyrobdella biwae*; 1 = Habitus dorsal with crop, testes, ganglial system and the position of the male and female gonopores on the ventral part of the body. The proboscis is partially everted; 2 = Lateral view of the head region with the proboscis, showing the dorsomedian and left ventro-lateral hook-like prominences; 3 = Lateral view of the posterior part of the postclitellar region with the caudal sucker (from Oka 1917a: 187, Oka 1917b: pl. 7: Figs 9, 10, 12) Figs 4-8. *Ancyrobdella smaragdina*, Uji Gawa (southernmost effluent of the Lake Biwa) near Otsu; 4 = Habitus dorsal; 5 = Habitus lateral; 6 = Ventral view of the head region, showing the completely everted proboscis and the eyes; 7 = Lateral view of the head region; 8 = Dorsal view of the head region with cranial sucker and mouth porus

Material: Japan, 57 specimens from four localities, Honshu: Uji Gawa (effluent of the Biwa-Ko) near Otsu, 23. Oct. 1994, 15 spec. (6 in Coll. HNHM); Katsura Gawa in Arashiyama, 31. Oct. 1994, 18 spec. (8 in Coll. HNHM); Hozu Gawa near Hozukyo, 2. Nov. 1994, 10 spec. (4 in Coll. HNHM); Shikoku: Ushiro Gawa near Nakamura, 26. Oct. 1994, 15 spec. (6 in Coll. HNHM), all leg. K. M. Polanec & H. Nesemann.

Description: Small oval leeches, the preserved specimens reach up to 7-14 mm body length (Hozu Gawa 14 mm). The head is slightly bulbous and stretched forward. The cranial sucker is small and ring-shaped, prominent folds are lacking. The mouth pore is placed centrally near the middle of the cranial sucker. The head bears two pairs of small eyes. The first pair and the second pair are similar in size. The length of the proboscis reaches up to 1/6 of the total body length and bears three hook-like prominences. The crop has seven pairs of caeca. The genital pores are separated by two annuli. The male gonopore is in the furrow XIa3/XIIa1, the female in XIIa2/a3. Living animals are always unicoloured without any dark pigmentation. The colour is basically pale green, greenish-blue to grey or reddish with filled crop caeca. The body consistence of living specimens is cartilaginous.

Observing the leech in the field with the naked eye, *A. smaragdina* bears a resemblance to the European *Glossiphonia paludosa*. It differs slightly only by the form of the head and praeclitellar region, which is more slender and elongated than in *G. paludosa*.

The pharynx of European species of the genus *Glossiphonia* (sensu Sawyer 1986: 654) was compared with that of *A. smaragdina* (Figs 6-7). The results, presented in the figures 9-10 with the example of *Glossiphonia complanata* (Linnaeus, 1758) show a proboscis, which is typical for all of the investigated species (*G. complanata*, *G. verrucata* (Fr. Müller, 1844), *G. concolor* (Apáthy, 1888), *G. paludosa* (Carena, 1824) and *G. nebulosa* Kalbe, 1964). The anterior tip of the proboscis of *Glossiphonia* spp. always bears numerous radially arranged folds. Based on the hitherto known information *Ancyrobdella* seems to be restricted to the Japanese islands.



Figs 9-10. *Glossiphonia complanata*, Traisen at St. Pölten, Austria; 9 = Anterior tip of the proboscis with radially arranged folds; 10 = Dorsal view of the head region with completely everted proboscis

Habitat: *A. smaragdina* was observed to inhabit the following water quality classes based on the Saprobic system (Morishita 1991): class II, beta-mesosaprobic (moderately polluted) and class II-III beta-mesosaprobic to alpha-mesosaprobic (critically polluted). Morishita (1991: 66) found this species occuring in the water quality class III (alpha-mesosaprobic, heavily polluted) of the Japanese saprobic system.

In our samples, *A. smaragdina* is the most common member of the Glossiphoniidae. The leech association of the four different rivers, wherein *A. smaragdina* was found, is summarized in Table 1. This species was always observed in slowly running or stagnant reaches of the river bed. The animals were collected numerously from stony substrate or from the shells of large freshwater bivalves (family Unionidae). In many specimens the crop was visible, filled with blood. The diet of *A. smaragdina* is largely unknown. There is no information whether it is a predator or a parasite.

Table 1. Association of leech species of the four localities of *A. smaragdina*

Name of the locality	**Uji (Biwa)**	**Karsura**	**Hozu**	**Ushiro**
Family Glossiphoniidae				
Ancyrobdella smaragdina	+	+	+	+
Glossiphonia complanata		+		
Helobdela stagnalis		+	+	
Alboglossiphonia lata		+		
Hemiclepsis japonica		+		
undetermined species			+	
Family Erpobdellidae				
Dina japonica		+	+	
Family Salifidae				
Barbronia webwri	+	+		
Odontobdella blanchardi	+	+	+	
Odontobdella polaneci				+

The leech *A. smaragdina* is well known in the Japanese literature, especially under the name *G. paludosa*. It is mentioned as "Fairly common species in Sino-Japanese region" by Sawyer (1986, Vol. 2: 741). The identity of the continental forms, determined as *Glossiphonia smaragdina* by Moore (1924: 353) with the Japanese *A. smaragdina* is not sufficiently known and has to be verified.

Discussion

According to Sawyer (1986), the leech species *Glossiphonia paludosa* is distributed widely all over the Palaearctic region. Its distribution area should extend from Western Europe to

Japan. Detailed investigations of the European populations show that there was a confusion of at least two different species *Batracobdelloides moogi* (Nesemann & Csányi 1995) and *Glossiphonia paludosa*. A similar situation of the very doubtful records of *"Glossiphonia paludosa"* in East Asian freshwaters is evident. Based on our own material, the absence of *G. paludosa* in Japan must be supposed. The investigated specimens are surprisingly similar to the European *G. paludosa* in their habitus, colour and shape, but they all belong to the genus *Ancyrobdella*. There is no possibility to distinguish undoubtedly the two genera *Glossiphonia* and *Ancyrobdella* based on their external morphology. This fact clearly shows that an intensive study of the distribution of the common palaearctic Hirudinea is needed.

References

Morishita, E. (1991): *The message of organisms*. Vol. 3. Biological monitoring, River and Lake Museum, Sankaido publishing house, 171 pp.

Moore, J. P. (1924): Notes on some Asiatic leeches (Hirudinea) principally from China, Kashmir, and British India. - *Proc. Acad. Sci. Philadelphia* **76:** 343-388.

Nesemann, H. & Csányi, B. (1995): Description of *Batracobelloides moogi* n. sp., a leech genus and species new to the European fauna with notes on the identity of *Hirudo paludosa* Carena, 1824 (Hirudinea: Glossiphoniidae). - *Lauterbornia* **21:** 69-78.

Oka, A. (1917a): *Ancyrobdella biwae* n. g. n. sp. ein merkwürdiger Rüsselegel aus Biwa-See. - *Annot. Zool. Jap.* **7:** 165-183.

Oka, A. (1917b): Zoological results of a tour in the Far East. Hirudinea. - *Mém. Asiat. Soc. Bengal.* **6:** 157-176.

Sawyer, R. T. (1986): *Leech Biology and Behaviour*. Vol. I-III, Oxford Science Publications, 1065 pp.

Soós, Á. (1969): Identification key to the leech (Hirudinoidea) genera of the world, with a catalogue of the species. VI. Family: Glossiphoniidae. - *Acta zool. Acad. sci. hung.* **15**: 397-454.

Author´s address: Hasko Nesemann
Department of Hydrobiology, Fisheries and Aquaculture,
Institute for Water Provision, Water Ecology & Waste Management,
University of Agricultural Sciences,
Max-Emanuel-Strasse 17
A-1180 Wien, Austria
E-mail: nesemann@edv1.boku.ac.at